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VECTORS CONTAINING SUCH NUCLEIC ACIDS AND USES THEREOF
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Cys Gln Cys Cys Glu Glu Lys Pro Ser Ile Met Val Ser Asn Leu His 1285 1290 1295

Lys Glu Tyr Asp Asp Lys Lys Asp Phe Leu Leu Ser Arg Lys Val Lys

Lys Val Ala Thr Lys Tyr Ile Ser Phe Cys Val Lys Lys Gly Glu Ile 1315 1320 1325

Leu Gly Leu Leu Gly Pro Asn Gly Ala Gly Lys Ser Thr Ile Ile Asn 1330 1335 1340 Ile Leu Val Gly Asp Ile Glu Pro Thr Ser Gly Gln Val Phe Leu Gly 1345 1350 1355 1360

Asp Tyr Ser Ser Glu Thr Ser Glu Asp Asp Ser Leu Lys Cys Met 1365 1370 1375

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Glu His Phe Glu Ile Tyr Gly Ala Val Lys Gly Met Ser Ala Ser Asp 1395 1400 1405

Met Lys Glu Val Ile Ser Arg Ile Thr His Ala Leu Asp Leu Lys Glu 1410 1415 1420

His Leu Gln Lys Thr Val Lys Lys Leu Pro Ala Gly Ile Lys Arg Lys 1425 1430 1435 1440

Leu Cys Phe Ala Leu Ser Met Leu Gly Asn Pro Gln Ile Thr Leu Leu
1445 1450 1455

Asp Glu Pro Ser Thr Gly Met Asp Pro Lys Ala Lys Gln His Met Trp 1460 1465 1470

Arg Ala Ile Arg Thr Ala Phe Lys Asn Arg Lys Arg Ala Ala Ile Leu 1475 1480 1485

Thr Thr His Tyr Met Glu Glu Ala Glu Ala Val Cys Asp Arg Val Ala 1490 1495 1500

Ile Met Val Ser Gly Gln Leu Arg Cys Ile Gly Thr Val Gln His Leu 1505 1510 1520

Lys Ser Lys Phe Gly Lys Gly Tyr Phe Leu Glu Ile Lys Leu Lys Asp 1525 1530 1535

Trp Ile Glu Asn Leu Glu Val Asp Arg Leu Gln Arg Glu Ile Gln Tyr 1540 1545 1550

Ile Phe Pro Asn Ala Ser Arg Gln Glu Ser Phe Ser Ser Ile Leu Ala 1555 1560 1565

Tyr Lys Ile Pro Lys Glu Asp Val Gln Ser Leu Ser Gln Ser Phe Phe 1570 1580

Lys Leu Glu Glu Ala Lys His Ala Phe Ala Ile Glu Glu Tyr Ser Phe 1585 1590 1595 1600

Ser Gln Ala Thr Leu Glu Gln Val Phe Val Glu Leu Thr Lys Glu Gln 1605 1610 1615

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Glu Trp Gly Leu Ser Ile Leu Leu Gly Leu Cys Ile Ala Leu Phe Ser 35 40 45

Ser Ser Met Arg Asn Val Gln Phe Pro Gly Met Ala Pro Gln Asn Leu 50 55 60

Gly Arg Val Asp Lys Phe Asn Ser Ser Ser Leu Met Val Val Tyr Thr 65 70 75 80

Pro Ile Ser Asn Leu Thr Gln Gln Ile Met Asn Lys Thr Ala Leu Ala 85 90 95

Pro Leu Lys Gly Thr Ser Val Ile Gly Ala Pro Asn Lys Thr His

Met Asp Glu Ile Leu Leu Glu Asn Leu Pro Tyr Ala Met Gly Ile Ile 115 120 125

Phe Asn Glu Thr Phe Ser Tyr Lys Leu Ile Phe Phe Gln Gly Tyr Asn 130 140

Ser Pro Leu Trp Lys Glu Asp Phe Ser Ala His Cys Trp Asp Gly Tyr 145 150 155 160

Gly Glu Phe Ser Cys Thr Leu Thr Lys Tyr Trp Asn Arg Gly Phe Val 165 170 175

Ala Leu Gln Thr Ala Ile Asn Thr Ala Ile Ile Glu Ile Thr Thr Asn 180 185 190

His Pro Val Met Glu Glu Leu Met Ser Val Thr Ala Ile Thr Met Lys 195 200 205

Thr Leu Pro Phe Ile Thr Lys Asn Leu Leu His Asn Glu Met Phe Ile

$\neg$ 1	^	716	$\neg$	<b>~</b>	_
21	.0	215	2.	Z١	L

Leu Phe Phe Leu Leu His Phe Ser Pro Leu Val Tyr Phe Ile Ser Leu 230 Asn Val Thr Lys Glu Arg Lys Lys Ser Lys Asn Leu Met Lys Met Met Gly Leu Gln Asp Ser Ala Phe Trp Leu Ser Trp Gly Leu Ile Tyr Ala Gly Phe Ile Phe Ile Ile Ser Ile Phe Ile Thr Ile Ile Ile Thr Phe 275 280 285 Thr Gln Ile Ile Val Met Thr Gly Phe Met Val Ile Phe Ile Leu Phe Phe Leu Tyr Gly Leu Ser Leu Val Ala Leu Val Phe Leu Met Ser Val 305 310 315 320 Leu Leu Lys Lys Ala Val Leu Thr Asn Leu Val Val Phe Leu Leu Thr Leu Phe Trp Gly Cys Leu Gly Phe Thr Val Phe Tyr Glu Gln Leu Pro 350 Ser Ser Leu Glu Trp Ile Leu Asn Ile Cys Ser Pro Phe Ala Phe Thr 365 360 Thr Gly Met Ile Gln Ile Ile Lys Leu Asp Tyr Asn Leu Asn Gly Val Ile Phe Pro Asp Pro Ser Gly Asp Ser Tyr Thr Met Ile Ala Thr Phe 390 Ser Met Leu Leu Asp Gly Leu Ile Tyr Leu Leu Leu Ala Leu Tyr Phe Asp Lys Ile Leu Pro Tyr Gly Asp Glu Arg His Tyr Ser Pro Leu 420 425 430 Phe Phe Leu Asn Ser Ser Ser Cys Phe Gln His Gln Arg Thr Asn Ala 435 440 445 Lys Val Ile Glu Lys Glu Ile Asp Ala Glu His Pro Ser Asp Asp Tyr 450 460 Phe Glu Pro Val Ala Pro Glu Phe Gln Gly Lys Glu Ala Ile Arg Ile 465 470 475 480 Arg Asn Val Lys Lys Glu Tyr Lys Gly Lys Ser Gly Lys Val Glu Ala 490

Leu Lys Gly Leu Leu Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Ile 500 510 Leu Gly His Ser Gly Ala Gly Lys Ser Ser Leu Leu Asn Ile Leu Asn 515 520 525 Gly Leu Ser Val Pro Thr Glu Gly Ser Val Thr Ile Tyr Asn Lys Asn Leu Ser Glu Met Gln Asp Leu Glu Glu Ile Arg Lys Ile Thr Gly Val 545 550 560 Cys Pro Gln Phe Asn Val Gln Phe Asp Ile Leu Thr Val Lys Glu Asn Leu Ser Leu Phe Ala Lys Ile Lys Gly Ile His Leu Lys Glu Val Glu 580 585 590 Gln Glu Val Gln Arg Ile Leu Leu Glu Leu Asp Met Gln Asn Ile Gln Asp Asn Leu Ala Lys His Leu Ser Glu Gly Gln Lys Arg Lys Leu Thr 610 615 620 Phe Gly Ile Thr Ile Leu Gly Asp Pro Gln Ile Leu Leu Leu Asp Glu Pro Thr Thr Gly Leu Asp Pro Phe Ser Arg Asp Gln Val Trp Ser Leu 655 Leu Arg Glu Arg Arg Ala Asp His Val Ile Leu Phe Ser Thr Gln Ser 660 665 670 Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Ile Met Ser Asn Gly Arg Leu Lys Cys Ala Gly Ser Ser Met Phe Leu Lys Arg Arg Trp 690 700 Gly Leu Gly Tyr His Leu Ser Leu His Arg Asn Glu Ile Cys Asn Pro Glu Gln Ile Thr Ser Phe Ile Thr His His Ile Pro Asp Ala Lys Leu 725 730 735 Lys Thr Glu Asn Lys Glu Lys Leu Val Tyr Thr Leu Pro Leu Glu Arg 745 Thr Asn Thr Phe Pro Asp Leu Phe Ser Asp Leu Asp Lys Cys Ser Asp 755 760 765 Gln Gly Val Thr Gly Tyr Asp Ile Ser Met Ser Thr Leu Asn Glu Val 770 775 780

Phe Met Lys Leu Glu Gly Gln Ser Thr Ile Glu Gln Asp Phe Glu Gln Val Glu Met Ile Arg Asp Ser Glu Ser Leu Asn Glu Met Glu Leu Ala 805 810 815 His Ser Ser Phe Ser Glu Met Gln Thr Ala Val Ser Asp Met Gly Leu 825 Trp Arg Met Gln Val Phe Ala Met Ala Arg Leu Arg Phe Leu Lys Leu 840 Lys Arg Gln Thr Lys Val Leu Leu Thr Leu Leu Leu Val Phe Gly Ile Ala Ile Phe Pro Leu Ile Val Glu Asn Ile Ile Tyr Ala Met Leu Asn 865 870 875 880 Glu Lys Ile Asp Trp Glu Phe Lys Asn Glu Leu Tyr Phe Leu Ser Pro 885 890 895 Gly Gln Leu Pro Gln Glu Pro Arg Thr Ser Leu Leu Ile Ile Asn Asn 905 Thr Glu Ser Asn Ile Glu Asp Phe Ile Lys Ser Leu Lys His Gln Asn 915 Ile Leu Leu Glu Val Asp Asp Phe Glu Asn Arg Asn Gly Thr Asp Gly 930 940 Leu Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Lys Gln Lys Asp Tyr 945 950 955 960 Arg Phe Ser Val Val Cys Asn Thr Lys Arg Leu His Cys Phe Pro Ile 965 970 975 Leu Met Asn Ile Ile Ser Asn Gly Leu Leu Gln Met Phe Asn His Thr Gln His Ile Arg Ile Glu Ser Ser Pro Phe Pro Leu Ser His Ile Gly 1005 Leu Trp Thr Gly Leu Pro Asp Gly Ser Phe Phe Leu Phe Leu Val Leu 1020 Cys Ser Ile Ser Pro Tyr Ile Thr Met Gly Ser Ile Ser Asp Tyr Lys Lys Asn Ala Lys Ser Gln Leu Trp Ile Ser Gly Leu Tyr Thr Ser Ala 1050 1055 Tyr Trp Cys Gly Gln Ala Leu Val Asp Val Ser Phe Phe Ile Leu Ile Leu Leu Leu Met Tyr Leu Ile Phe Tyr Ile Glu Asn Met Gln Tyr Leu 1075 1080 1085

Leu Ile Thr Ser Gln Ile Val Phe Ala Leu Val Ile Val Thr Pro Gly 1090 1095 1100

Tyr Ala Ala Ser Leu Val Phe Phe Ile Tyr Met Ile Ser Phe Ile Phe 1105 1110 1115 1120

Arg Lys Arg Arg Lys Asn Ser Gly Leu Trp Ser Phe Tyr Phe Phe 1125 1130 1135

Ala Ser Thr Ile Met Phe Ser Ile Thr Leu Ile Asn His Phe Asp Leu 1140 1145 1150

Ser Ile Leu Ile Thr Thr Met Val Leu Val Pro Ser Tyr Thr Leu Leu 1155 1160 1165

Gly Phe Lys Thr Phe Leu Glu Val Arg Asp Gln Glu His Tyr Arg Glu 1170 1175 1180

Phe Pro Glu Ala Asn Phe Glu Leu Ser Ala Thr Asp Phe Leu Val Cys 1185 1190 1195 1200

Phe Ile Pro Tyr Phe Gln Thr Leu Leu Phe Val Phe Val Leu Arg Cys 1205 1210 1215

Met Glu Leu Lys Cys Gly Lys Lys Arg Met Arg Lys Asp Pro Val Phe 1220 1225 1230

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Ile Asp Glu Asp Glu Asp Ile Gln Thr Glu Arg Ile Arg Thr Ala Thr 1250 1255 1260

Ala Leu Thr Thr Ser Ile Leu Asp Glu Lys Pro Val Ile Ile Ala Ser 1265 1270 1280

Cys Leu His Lys Glu Tyr Ala Gly Gln Lys Lys Ser Cys Phe Ser Lys 1285 1290 1295

Arg Lys Lys Ile Ala Ala Arg Asn Ile Ser Phe Cys Val Gln Glu 1300 1305 1310

Gly Glu Ile Leu Gly Leu Leu Gly Pro Ser Gly Ala Gly Lys Ser Ser 1315 1320 1325

Ser Ile Arg Met Ile Ser Gly Ile Thr Lys Pro Thr Ala Gly Glu Val 1330 1335 1340 Glu Leu Lys Gly Cys Ser Ser Val Leu Gly His Leu Gly Tyr Cys Pro 1345 1350 1355 1360

Gln Glu Asn Val Leu Trp Pro Met Leu Thr Leu Arg Glu His Leu Glu 1365 1370 1375

Val Tyr Ala Ala Val Lys Gly Leu Arg Lys Ala Asp Ala Arg Leu Ala 1380 1385 1390

Ile Ala Arg Leu Val Ser Ala Phe Lys Leu His Glu Gln Leu Asn Val 1395 1400 1405

Pro Val Gln Lys Leu Thr Ala Gly Ile Thr Arg Lys Leu Cys Phe Val 1410 1415 1420

Leu Ser Leu Leu Gly Asn Ser Pro Val Leu Leu Leu Asp Glu Pro Ser 1425 1430 1435 1440

Thr Gly Ile Asp Pro Thr Gly Gln Gln Met Trp Gln Ala Ile Gln 1445 1450 1455

Ala Val Val Lys Asn Thr Glu Arg Gly Val Leu Leu Thr Thr His Asn 1460 1465 1470

Leu Ala Glu Ala Glu Ala Leu Cys Asp Arg Val Ala Ile Met Val Ser 1480 1485

Gly Arg Leu Arg Cys Ile Gly Ser Ile Gln His Leu Lys Asn Lys Leu 1490 1495 1500

Gly Lys Asp Tyr Ile Leu Glu Leu Lys Val Lys Glu Thr Ser Gln Val 1505 1510 1515 1520

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Gln Glu Arg Tyr Ser Ser Leu Leu Thr Tyr Lys Leu Pro Val Ala Asp 1540 1550

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Val Ser Val Asn Val Thr Gln Glu Arg Gln Tyr Ile Thr Ser Leu Met Thr Met Met Gly Leu Arg Glu Ser Ala Phe Trp Leu Ser Trp Gly Leu Met Tyr Ala Gly Phe Ile Leu Ile Met Ala Thr Leu Met Ala Leu Ile 285 Val Lys Ser Ala Gln Ile Val Val Leu Thr Gly Phe Val Met Val Phe 290 295 300 Thr Leu Phe Leu Leu Tyr Gly Leu Ser Leu Ile Thr Leu Ala Phe Leu Met Ser Val Leu Ile Lys Lys Pro Phe Leu Thr Gly Leu Val Val Phe 330 Leu Leu Ile Val Phe Trp Gly Ile Leu Gly Phe Pro Ala Leu Tyr Thr His Leu Pro Ala Phe Leu Glu Trp Thr Leu Cys Leu Leu Ser Pro Phe Ala Phe Thr Val Gly Met Ala Gln Leu Ile His Leu Asp Tyr Asp Val Asn Ser Asn Ala His Leu Asp Ser Ser Gln Asn Pro Tyr Leu Ile Ile 390 Ala Thr Leu Phe Met Leu Val Phe Asp Thr Leu Leu Tyr Leu Val Leu 405 410 Thr Leu Tyr Phe Asp Lys Ile Leu Pro Ala Glu Tyr Gly His Arg Cys Ser Pro Leu Phe Phe Leu Lys Ser Cys Phe Trp Phe Gln His Gly Arg 440 Ala Asn His Val Val Leu Glu Asn Glu Thr Asp Ser Asp Pro Thr Pro 450 Asn Asp Cys Phe Glu Pro Val Ser Pro Glu Phe Cys Gly Lys Glu Ala Ile Arg Ile Lys Asn Leu Lys Lys Glu Tyr Ala Gly Lys Cys Glu Arg 485 Val Glu Ala Leu Lys Gly Val Val Phe Asp Ile Tyr Glu Gly Gln Ile Thr Ala Leu Leu Gly His Ser Gly Ala Gly Lys Thr Thr Leu Leu Asn 515 520 525

Ile Leu Ser Gly Leu Ser Val Pro Thr Ser Gly Ser Val Thr Val Tyr 530 540 Asn His Thr Leu Ser Arg Met Ala Asp Ile Glu Asn Ile Ser Lys Phe Thr Gly Phe Cys Pro Gln Ser Asn Val Gln Phe Gly Phe Leu Thr Val Lys Glu Asn Leu Arg Leu Phe Ala Lys Ile Lys Gly Ile Leu Pro His 580 585 590 Glu Val Glu Lys Glu Val Gln Arg Val Val Gln Glu Leu Glu Met Glu Asn Ile Gln Asp Ile Leu Ala Gln Asn Leu Ser Gly Gly Gln Asn Arg 610 620 Lys Leu Thr Phe Gly Ile Ala Ile Leu Gly Asp Pro Gln Val Leu Leu 625 630 635 640 Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro Leu Ser Arg His Arg Ile 645 650 655 Trp Asn Leu Leu Lys Glu Gly Lys Ser Asp Arg Val Ile Leu Phe Ser 660 665 670 Thr Gln Phe Ile Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe 675 680 685 Ile Ser Asn Gly Lys Leu Lys Cys Ala Gly Ser Ser Leu Phe Leu Lys 690 695 700 Lys Lys Trp Gly Ile Gly Tyr His Leu Ser Leu His Leu Asn Glu Arg 705 710 715 720 Cys Asp Pro Glu Ser Ile Thr Ser Leu Val Lys Gln His Ile Ser Asp 725 730 735 Ala Lys Leu Thr Ala Gln Ser Glu Glu Lys Leu Val Tyr Ile Leu Pro 740 745 750 Leu Glu Arg Thr Asn Lys Phe Pro Glu Leu Tyr Arg Asp Leu Asp Arg 755 760 765 Cys Ser Asn Gln Gly Ile Glu Asp Tyr Gly Val Ser Ile Thr Thr Leu 770 780 Asn Glu Val Phe Leu Lys Leu Glu Gly Lys Ser Thr Ile Asp Glu Ser 785 790 795 800 Asp Ile Gly Ile Trp Gly Gln Leu Gln Thr Asp Gly Ala Lys Asp Ile 805 810 815 Gly Ser Leu Val Glu Leu Glu Gln Val Leu Ser Ser Phe His Glu Thr 825 Arg Lys Thr Ile Ser Gly Val Ala Leu Trp Arg Gln Gln Val Cys Ala Ile Ala Lys Val Arg Phe Leu Lys Leu Lys Lys Glu Arg Lys Ser Leu Trp Thr Ile Leu Leu Leu Phe Gly Ile Ser Phe Ile Pro Gln Leu Leu 880 Glu His Leu Phe Tyr Glu Ser Tyr Gln Lys Ser Tyr Pro Trp Glu Leu 885 890 895 Ser Pro Asn Thr Tyr Phe Leu Ser Pro Gly Gln Gln Pro Gln Asp Pro Leu Thr His Leu Leu Val Ile Asn Lys Thr Gly Ser Thr Ile Asp Asn 915 Phe Leu His Ser Leu Arg Arg Gln Asn Ile Ala Ile Glu Val Asp Ala Phe Gly Thr Arg Asn Gly Thr Asp Asp Pro Ser Tyr Asn Gly Ala Ile 960 Ile Val Ser Gly Asp Glu Lys Asp His Arg Phe Ser Ile Ala Cys Asn 965 970 975 Thr Lys Arg Leu Asn Cys Phe Pro Val Leu Leu Asp Val Ile Ser Asn 985 Gly Leu Leu Gly Ile Phe Asn Ser Ser Glu His Ile Gln Thr Asp Arg 1000 1005 995 Ser Thr Phe Phe Glu Glu His Met Asp Tyr Glu Tyr Gly Tyr Arg Ser Asn Thr Phe Phe Trp Ile Pro Met Ala Ala Ser Phe Thr Pro Tyr Ile 1030 1040 1025 Ala Met Ser Ser Ile Gly Asp Tyr Lys Lys Lys Ala His Ser Gln Leu 1045 Arg Ile Ser Gly Leu Tyr Pro Ser Ala Tyr Trp Phe Gly Gln Ala Leu 1060 Val Asp Val Ser Leu Tyr Phe Leu Ile Leu Leu Het Gln Ile Met 1075 1085 1080

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Gly Ile Trp Ser Phe Phe Phe Leu Ile Val Val Ile Phe Ser Ile Val 1140 1145 1150

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Met Leu Ile Pro Pro Phe Thr Leu Ile Gly Ser Leu Phe Ile Phe Ser 1170 1175 1180

Glu Ile Ser Pro Asp Ser Met Asp Tyr Leu Gly Ala Ser Glu Ser Glu 1185 1190 1195 1200

Ile Val Tyr Leu Ala Leu Leu Ile Pro Tyr Leu His Phe Leu Ile Phe 1205 1210 1215

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Pro Asn Pro Glu Glu Pro Glu Glu Glu Glu Asp Ile Gln Met Glu 1250 1255 1260

Arg Met Arg Thr Val Asn Ala Met Ala Val Arg Asp Phe Asp Glu Thr 1265 1270 1275 1280

Pro Val Ile Ile Ala Ser Cys Leu Arg Lys Glu Tyr Ala Gly Lys Lys 1285 1290 1295

Lys Asn Cys Phe Ser Lys Arg Lys Lys Thr Ile Ala Thr Arg Asn Val 1300 1305 1310

Ser Phe Cys Val Lys Lys Gly Glu Val Ile Gly Leu Leu Gly His Asn 1315 1320 1325

Gly Ala Gly Lys Ser Thr Thr Ile Lys Met Ile Thr Gly Asp Thr Lys 1330 1335 1340

Pro Thr Ala Gly Gln Val Ile Leu Lys Gly Ser Gly Gly Glu Pro 1345 1350 1355 1360

Leu Gly Phe Leu Gly Tyr Cys Pro Gln Glu Asn Ala Leu Trp Pro Asn

Leu Thr Val Arg Gln His Leu Glu Val Tyr Ala Ala Val Lys Gly Leu 1380 1385 1390

Arg Lys Gly Asp Ala Met Ile Ala Ile Thr Arg Leu Val Asp Ala Leu 1395 1400 1405

Lys Leu Gln Asp Gln Leu Lys Ala Pro Val Lys Thr Leu Ser Glu Gly 1410 1415 1420

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Gln Gln Met Trp Gln Val Ile Arg Ala Thr Phe Arg Asn Thr Glu Arg 1460 1465 1470

Gly Ala Leu Leu Thr Thr His Tyr Met Ala Glu Ala Glu Ala Val Cys 1475 1480 1485

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Ile Gln His Leu Lys Ser Lys Phe Gly Lys Asp Tyr Leu Leu Glu Met 1505 1510 1515 1520

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Arg Leu Phe Pro Gln Ala Ala Gln Gln Glu Arg Phe Ser Ser Leu Met 1540 1545 1550

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Phe Lys Leu Glu Ile Val Lys Gln Ser Phe Asp Leu Glu Glu Tyr Ser 1570 1575 1580

Leu Ser Gln Ser Thr Leu Glu Gln Val Phe Leu Glu Leu Ser Lys Glu 1585 1590 1595 1600

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Phe Thr Val Leu Tyr Arg Gln Leu Pro Leu Ser Leu Gly Trp Val Leu Ser Leu Leu Ser Pro Phe Ala Phe Thr Ala Gly Met Ala Gln Val Thr His Leu Asp Asn Tyr Leu Ser Gly Val Ile Phe Pro Asp Pro Ser Gly 290 295 300 Asp Ser Tyr Lys Met Ile Ala Thr Phe Phe Ile Leu Ala Phe Asp Thr Leu Phe Tyr Leu Ile Phe Thr Leu Tyr Phe Glu Arg Val Leu Pro Asp Lys Asp Gly His Gly Asp Ser Pro Leu Phe Phe Leu Lys Ser Ser Phe 345 Trp Ser Lys His Gln Asn Thr His His Glu Ile Phe Glu Asn Glu Ile Asn Pro Glu His Ser Ser Asp Asp Ser Phe Glu Pro Val Ser Pro Glu 370 375 380 Phe His Gly Lys Glu Ala Ile Arg Ile Arg Asn Val Ile Lys Glu Tyr 395 Asn Gly Lys Thr Gly Lys Val Glu Ala Leu Gln Gly Ile Phe Phe Asp 405 410 415 Ile Tyr Glu Gly Gln Ile Thr Ala Ile Leu Gly His Asn Gly Ala Gly 425 Lys Ser Thr Leu Leu Asn Ile Leu Ser Gly Leu Ser Val Ser Thr Glu 440 Gly Ser Ala Thr Ile Tyr Asn Thr Gln Leu Ser Glu Ile Thr Asp Met 455 Glu Glu Ile Arg Lys Asn Ile Gly Phe Cys Pro Gln Phe Asn Phe Gln Phe Asp Phe Leu Thr Val Arg Glu Asn Leu Arg Val Phe Ala Lys Ile Lys Gly Ile Gln Pro Lys Glu Val Glu Gln Glu Val Lys Arg Ile Ile 500 505 510 Met Glu Leu Asp Met Gln Ser Ile Gln Asp Ile Ile Ala Lys Lys Leu Ser Gly Gly Gln Lys Arg Lys Leu Thr Leu Gly Ile Ala Ile Leu Gly Asp Pro Gln Val Leu Leu Leu Asp Glu Pro Thr Ala Gly Leu Asp Pro 560 545 Phe Ser Arg His Arg Val Trp Ser Leu Leu Lys Glu His Lys Val Asp 565 570 575 Arg Leu Ile Leu Phe Ser Thr Gln Phe Met Asp Glu Ala Asp Ile Leu Ala Asp Arg Lys Val Phe Leu Ser Asn Gly Lys Leu Lys Cys Ala Gly 595 600 605 Ser Ser Leu Phe Leu Lys Arg Lys Trp Gly Ile Gly Tyr His Leu Ser 610 620 Leu His Arg Asn Glu Met Cys Asp Thr Glu Lys Ile Thr Ser Leu Ile 625 630 635 640 Lys Gln His Ile Pro Asp Ala Lys Leu Thr Thr Glu Ser Glu Glu Lys 650 645 Leu Val Tyr Ser Leu Pro Leu Glu Lys Thr Asn Lys Phe Pro Asp Leu Tyr Ser Asp Leu Asp Lys Cys Ser Asp Gln Gly Ile Arg Asn Tyr Ala 675 680 685 Val Ser Val Thr Ser Leu Asn Glu Val Phe Leu Asn Leu Glu Gly Lys 695 Ser Ala Ile Asp Glu Pro Asp Phe Asp Ile Gly Lys Gln Glu Lys Ile 705 710 715 720 His Val Thr Arg Asn Thr Gly Asp Glu Ser Glu Met Glu Gln Val Leu 725 730 735 Cys Ser Leu Pro Glu Thr Arg Lys Ala Val Ser Ser Ala Ala Leu Trp 740 745 750 Arg Arg Gln Ile Tyr Ala Val Ala Thr Leu Arg Phe Leu Lys Leu Arg Arg Glu Arg Arg Ala Leu Leu Cys Leu Leu Val Leu Gly Ile Ala 770 780 Phe Ile Pro Ile Ile Leu Glu Lys Ile Met Tyr Lys Val Thr Arg Glu 785 790 795 800 790 Thr His Cys Trp Glu Phe Ser Pro Ser Met Tyr Phe Leu Ser Leu Glu 815 810 805 Gln Ile Pro Lys Thr Pro Leu Thr Ser\_Leu Leu Ile Val Asn Asn Thr 820 825 830

Gly Ser Asn Ile Glu Asp Leu Val His Ser Leu Lys Cys Gln Asp Ile 840 Val Leu Glu Ile Asp Asp Phe Arg Asn Arg Asn Gly Ser Asp Asp Pro Ser Tyr Asn Gly Ala Ile Ile Val Ser Gly Asp Gln Lys Asp Tyr Arg 865 870 875 880 Phe Ser Val Ala Cys Asn Thr Lys Lys Leu Asn Cys Phe Pro Val Leu Met Gly Ile Val Ser Asn Ala Leu Met Gly Ile Phe Asn Phe Thr Glu 910 905 Leu Ile Gln Thr Glu Ser Thr Ser Phe Ser Arg Asp Asp Ile Val Leu 915 920 925 Asp Leu Gly Phe Ile Asp Gly Ser Ile Phe Leu Leu Leu Ile Thr Asn 940 Cys Val Ser Pro Phe Ile Gly Met Ser Ser Ile Ser Asp Tyr Lys Lys Asn Val Gln Ser Gln Leu Trp Ile Ser Gly Leu Trp Pro Ser Ala Tyr Trp Cys Gly Gln Ala Leu Val Asp Ile Pro Leu Tyr Phe Leu Ile Leu 985 Phe Ser Ile His Leu Ile Tyr Tyr Phe Ile Phe Leu Gly Phe Gln Leu 1000 Ser Trp Glu Leu Met Phe Val Leu Val Val Cys Ile Ile Gly Cys Ala 1015 Val Ser Leu Ile Phe Leu Thr Tyr Val Leu Ser Phe Ile Phe Arg Lys 1030 1025 Trp Arg Lys Asn Asn Gly Phe Trp Ser Phe Gly Phe Phe Ile Ile Leu Ile Cys Val Ser Thr Ile Met Val Ser Thr Gln Tyr Glu Lys Leu Asn 1070 1060 1065 Leu Ile Leu Cys Met Ile Phe Ile Pro Ser Phe Thr Leu Leu Gly Tyr 1085 1080 1075

1100

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Asp Asn Arg Ile Asn Glu Val Asn Lys Thr Ile Leu Leu Thr Thr Leu 1110 Ile Pro Tyr Leu Gln Ser Val Ile Phe Leu Phe Val Ile Arg Cys Leu Glu Met Lys Tyr Gly Asn Glu Ile Met Asn Lys Asp Pro Val Phe Arg 1145 Ile Ser Pro Arg Ser Arg Glu Thr His Pro Asn Pro Glu Glu Pro Glu Glu Glu Asp Glu Asp Val Gln Ala Glu Arg Val Gln Ala Ala Asn Ala 1175 Leu Thr Ala Pro Asn Leu Glu Glu Glu Pro Val Ile Thr Ala Ser Cys 1195 1190 Leu His Lys Glu Tyr Tyr Glu Thr Lys Lys Ser Cys Phe Ser Thr Arg Lys Lys Lys Ile Ala Ile Arg Asn Val Ser Phe Cys Val Lys Lys Gly Glu Val Leu Gly Leu Leu Gly His Asn Gly Ala Gly Lys Ser Thr Ser Ile Lys Met Ile Thr Gly Cys Thr Lys Pro Thr Ala Gly Val Val Val Leu Gln Gly Ser Arg Ala Ser Val Arg Gln Gln His Asp Asn Ser Leu 1275 Lys Phe Leu Gly Tyr Cys Pro Gln Glu Asn Ser Leu Trp Pro Lys Leu Thr Met Lys Glu His Leu Glu Leu Tyr Ala Ala Val Lys Gly Leu Gly 1310 Lys Glu Asp Ala Ala Leu Ser Ile Ser Arg Leu Val Glu Ala Leu Lys

Leu Gln Glu Gln Leu Lys Ala Pro Val Lys Thr Leu Ser Glu Gly Ile
Lys Arg Lys Leu Cys Phe Val Leu Ser Ile Leu Gly Asn Pro Ser Val
1345

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1365

Gln Met Trp Gln Ile Leu Gln Ala Thr Val Lys Asn Lys Glu Arg Gly
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1380

1390

Thr Leu Leu Thr Thr His Tyr Met Ser Glu Ala Glu Ala Val Cys Asp 1395 Arg Met Ala Met Met Val Ser Gly Thr Leu Arg Cys Ile Gly Ser Ile Gln His Leu Lys Asn Lys Phe Gly Arg Asp Tyr Leu Leu Glu Ile Lys Met Lys Glu Pro Thr Gln Val Glu Ala Leu His Thr Glu Ile Leu Lys Leu Phe Pro Gln Ala Ala Trp Gln Glu Arg Tyr Ser Ser Leu Met Ala

Tyr Lys Leu Pro Val Glu Asp Val His Pro Leu Ser Arg Ala Phe Phe 1485 1480

Lys Leu Glu Ala Met Lys Gln Thr Phe Asn Leu Glu Glu Tyr Ser Leu 1495

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dans dead from In
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tctggcctgg tagtggcata tacaccagtc agtaacataa cacaaaggat aatgaataag 180
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